BY ORDER OF THE
SECRETARY OF THE AIR FORCE

AIR FORCE POLICY DIRECTIVE 40-2

15 MARCH 2007

Medical Command

RADIOACTIVE MATERIALS (NON-NUCLEAR WEAPONS

COMPLIANCE WITH THIS PUBLICATION IS MANDATORY

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(Lt Gen James G. Roudebush)

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This directive establishes policy for the control of radioactive materials within the possession of the Air Force, including those radioactive materials regulated by the U.S. Nuclear Regulatory Commission (NRC), but excluding those used in nuclear weapons or those that are otherwise exempted from regulation by the NRC by the Atomic Energy Act (AEA), as amended. It implements national policies and regulatory requirements of: the Atomic Energy Act (AEA) of 1954, as amended, Energy Reorganization Act of 1974 (Public Law 93-438); Energy Policy Act of 2005 (Public Law 109-58); Title 10, Code of Federal Regulations (CFR), Parts 0-199, Energy; Title 49, CFR, Parts 0-177, Transportation. It also supports implementation of DOD Instruction 6055.8, *Occupational Radiation Protection Program.* This publication applies to the Air National Guard and Reserve. Ensure that all records created as a result of processes prescribed in this publication are maintained in accordance with AFMAN 37-123, Management of Records and disposed of in accordance with the Air Force Records Disposition Schedule (RDS) located at **https://afrims.amc.af.mil/**

SUMMARY OF CHANGES

This revision incorporates minor changes to radioactive material management policy.

1. The use of radioactive materials is beneficial, and often essential to success, in medicine, research and development and operational activities. However, there are potential hazards associated with these substances that must be controlled to protect human health and the environment.

2. The Air Force will fully comply with all applicable federal regulations for the control of radioactive material.

3. The Air Force will limit the use of radioactive materials as much as possible.

3.1. Radioactive materials will only be used when justified.

3.2. Radiation exposures to workers and the public will be maintained below federal regulatory limits and as low as reasonably achievable (ALARA).

3.3. Radioactive materials will only be used on Air Force installations when properly authorized by an appropriate permit or license, and when approved by the installation commander.

4. Only individuals qualified by appropriate training and experience will be allowed to use, supervise the use of, train others and oversee radiation safety programs for use of radioactive materials.

5. The Air Force will have a formal program to assess compliance with this policy, provisions of the Air Force Master Materials License (MML) and with USAF Radioactive Material Permits.

6. The following responsibilities and authorities are established:

6.1. AF/SG will provide policy, advocate resources for, oversee and enforce the control of radioactive materials in the US Air Force, under the auspices of the Air Force MML.

6.2. The Air Force Radioisotope Committee (RIC), managed under AF/SG, functions as the Air Force radiation safety committee, administering the Air Force MML. It manages the Air Force use of radioactive materials by Air Force personnel, approving or denying such use, and enforces compliance with the Air Force MML.

6.3. The Air Force Inspection Agency (AFIA), under SAF/IG, inspects unit compliance with USAF Radioactive Material Permits, federal regulations, and other radiation protection issues as required by the RIC.

6.4. Commanders of Air Force organizations using radioactive materials will ensure only authorized activities are conducted, establish programs to ensure activities are safely performed and in compliance with requirements, and provide resources needed to comply with this policy.

6.5. Individuals are responsible for effective control of radioactive materials by:

6.5.1. Complying with radiation safety procedures, the license or permit, USAF or local instructions and federal regulations.

6.5.2. Following instructions or directives of the Commander, their supervisors and the Radiation Safety Officer (RSO).

6.5.3. Informing the Commander, supervisor or RSO about conditions believed to be unsafe, non-compliant or believed to be the cause or potential cause of a radiological incident or mishap.

6.5.4. Keeping exposures to radiation ALARA.

7. This policy applies to all Air Force organizations and employees who acquire or possess radioactive materials subject to this regulation and to any agency or person (including contractors) who bring radioactive materials onto Air Force installations or use radioactive materials on Air Force installations. It does not apply to radioactive materials transferred from the Department of Energy (DOE) to the DOD as components of nuclear weapon systems, certain radioactive components of weapons systems, nuclear reactor systems components and fuel controlled under Section 91(a) and (b) of the AEA, as amended, and DOE activities related to SAFE HAVEN requirements.

8. See **Attachment 1** for measuring compliance with policy.

9. See **Attachment 2** for a glossary of references and reporting information.

10. See **Attachment 3** for interfacing documents.

MICHAEL W. WYNNE
Secretary of the Air Force

Attachment 1

MEASURING COMPLIANCE WITH POLICY

A1.1. Three objective measures of overall compliance with policy are the number of incidents and mishaps involving radioactive materials; the number of regulatory violations identified against Air Force users by the primary regulating agency, the NRC; and recorded occupational exposures to workers.

A1.1.1. **Incidents and Mishaps.** The total number of events involving radioactive materials reported in a calendar year by Air Force units to HQ AFMOA/SGPR and determined by SGPR to be a valid reportable event as defined in Title 10 CFR, Parts 0-199, *Energy*, or AFI 40-201, *Managing Radioactive Materials in the US Air Force* and AFI 91-202, *The US Air Force Mishap Prevention Program*.

A1.1.2. **Violation Rate and Violations I-IV.** The total number of violations per inspection and the number of Severity Level I, II, III or IV (Title 10 CFR, Part 2, *Rules of Practice for Domestic Licensing Proceedings*) violations of the US Air Force MML, USAF Radioactive Material permit conditions or federal regulations as reported by either AFIA or the NRC in a calendar year. AFIA and the NRC sends AFMOA/SGPR their reports involving violations.

A1.1.3. **Personnel Radiation Dose Summary RCS: HAF-SGP(A) 9232.** The average annual dose and highest dose for all individuals working with radioactive materials as recorded in the Master Radiation Exposure Registry. Dose categories include total effective dose equivalent, whole body deep dose, lens of eye dose, shallow dose and extremity dose. Information on the occupational area for these individuals shall also be available. The Air Force Institute for Operational Health (AFIOH) sends AFMOA/SGPR a summary report by 1 April each year and supplements these reports during mishap situations and emergencies.

A1.2. Data are compiled annually and compared to the previous 4 years' data. Goals are zero Air Force incidents or mishaps, and worker and public exposures remain below federal regulatory limits and are ALARA.

Attachment 2

GLOSSARY OF REFERENCES AND REPORTING INFORMATION

A2.1. Air Force Installation. Locations including AF bases, AF leased space, city-bases, and AF operations on a DoD or coalition base.

A2.2. Air Force Master Materials License (MML). The single NRC license issued to the US Air Force. The MML delegates to the US Air Force Radioisotope Committee (RIC) regulatory authority over all byproduct, source, and limited quantities of special nuclear material used by the Air Force.

A2.3. As Low As Reasonably Achievable (ALARA). The principle that personnel exposures must be maintained as low as possible consistent with existing technology, cost, and operational requirements.

A2.4. Byproduct Material. As defined in the Atomic Energy Act and amended in the Energy Policy Act of 2005 includes:

A2.4.1. any radioactive material (except special nuclear material) yielded in or made radioactive by exposure to the radiation incident to the process of producing or utilizing special nuclear material;

A2.4.2. (A) any discrete source of radium-226 that is produced, extracted, or converted after extraction, before, on, or after August 8, 2005 for use for a commercial, medical, or research activity; or

(B) any material that—

(i) has been made radioactive by use of a particle accelerator; and

(ii) is produced, extracted, or converted after extraction, before, on, or after August 8, 2005 for use for a commercial, medical, or research activity; and

A2.4.3. any discrete source of naturally occurring radioactive material, other than source material, that:

(A) the NRC, in consultation with the Administrator of the Environmental Protection Agency, the Secretary of Energy, the Secretary of Homeland Security, and the head of any other appropriate Federal agency, determines would pose a threat similar to the threat posed by a discrete source of radium-226 to the public health and safety or the common defense and security; and

(B) before, on, or after Aug. 8, 2005 is extracted or converted after extraction for use in a commercial, medical, or research activity.

A2.5. Incident. For purpose of this directive, an incident is any event involving a nuclear reactor, radioisotope power system, or radioactive material that is not defined as a mishap, or that may result in adverse public reaction. This includes weather-induced events, attacks against sensitive information or spontaneous/unforeseen failures of equipment or material.

A2.6. License. NRC or Agreement State written authorization to receive, possess, use, or transfer Byproduct, Source, or Special Nuclear Material.

A2.7. Mishap. For purposes of this directive, a mishap is defined in AFI 91-202. It is an event involving human acts of omission or commission involving a nuclear reactor, radioisotope power system, or radioactive material resulting in any of the following:

A2.7.1. A loss of control of radioactive material that presents a hazard to life, health, or property. This includes loss of control that may result in any person in an unrestricted area exceeding the limits for exposure to ionizing radiation as stated in Title 10, CFR, Part 20, *Standards for Protection Against Radiation*.

A2.7.2. Any unexpected event involving radioactive materials or radiation exposure that is serious enough to warrant the interest or action of officials or agencies outside the Air Force. This category includes event: having domestic or international implications, those that may cause inquiries by the public or press, and those requiring immediate notification to the NRC under Title 10, Code of Federal Regulations, Part 20, Standards for Protection Against Radiation.

A2.8. Naturally Occurring and Accelerator Produced Radioactive Material (NARM). Radioactive material that occurs in nature, such as radium-226, or is produced by a particle accelerator and that is not otherwise defined as byproduct, source, or special nuclear material.

A2.9. Permit. Shortened term for US Air Force, US Navy or Veterans Administration Radioactive Material Permit. See also USAF Radioactive Material Permit.

A2.10. Section Ninety-One "A" and "B" (91[a] and 91[b]) Material. Radioactive material exempted from NRC licensing controls under § 91(a) and § 91(b) of the Atomic Energy Act of 1954, as amended, in the interest of national defense.

A2.11. Radiation Safety Officer (RSO). An individual with specific education, military training, and professional experience in radiation protection practice designated by a commander or the RIC to manage radiation safety programs. The term "Radiation Safety Officer" is a functional title and does not denote a commissioned status or job classification in the Air Force.

A2.12. Radioactive Material. Material whose nuclei, because of their unstable nature, decay by emission of ionizing radiation. The radiation emitted may be alpha or beta particles, gamma or X-rays, or neutrons.

A2.13. SAFE HAVEN. Temporary storage and protection provided for DOE classified shipment transporters at DOD facilities to ensure safety and security of nuclear material or non-nuclear classified material.

A2.14. Source Material. Uranium or thorium or any combination thereof in any physical or chemical form; or ores that have, by weight, one-twentieth of 1 percent (0.05 percent) or more of uranium, thorium, or any combination thereof. Source material does not include special nuclear material.

A2.15. Special Nuclear Material (SNM). Plutonium, uranium-233, uranium enriched in the isotope 233 or in the isotope 235, and any other material that the NRC determines to be SNM. SNM does not include source material.

A2.16. US Air Force Radioactive Material (RAM) Permit. Written authorization from the US Air Force RIC for Air Force organizations to receive, possess, distribute, use, transfer, or dispose of radioactive materials.

A2.17. US Air Force Radioisotope Committee (RIC). A committee established in accordance with, and the named licensee on, the Air Force MML to coordinate the administrative and regulatory aspects of licensing, possessing, distributing, using, transferring, transporting and disposing of all radioactive material in the Air Force except that transferred from DOE to the DOD in nuclear weapon systems, certain radioactive components of weapons systems and nuclear reactor systems, components and fuel controlled under Section 91(a) and (b) of the AEA.

Attachment 3

INTERFACING DOCUMENTS

DOD Publications

DOD Directive 3150.8, *DoD Response to Radiological Accidents,13 Jun 96*

DOD Instruction 6055.8, With Change 1, *Occupational Radiation Protection Program, 6 May 96*

DOD Manual 6050.5-M, *Hazardous Material Information System Procedures, 1 Jul 81*

Defense Transportation Regulation (DTR) DOD 4500.9-R-Part II, *Cargo Movement, 1 Nov 04*

Departmental Publications

AFPD 10-2, *Readiness, 30 Oct 06*

AFPD 10-25, *Full-Spectrum Threat Response, 18 Jul 02*

AFPD 24-2, *Preparation and Movement of Air Force Materiel, 3 Sep 03*

AFPD 32-40, *Disaster Preparedness, 1 May 97*

AFPD 32-70, *Environmental Quality*, *20 Jul 94*

AFPD 40-4, *Clinical Investigation and Human Use in Medical Research, 11 May 94*

AFPD 48-1, *Aerospace Medicine Program, 3 Oct 05*

AFPD 91-1, *Nuclear Weapons and Systems Surety, 1 Nov 99*

AFPD 91-2, *Safety Programs, 28 Sep 93*

AFPD 91-3, *Occupational Safety and Health, 27 Sep 93*

AFI 40-201, *Managing Radioactive Materials in the US Air Force, 2007*

AFI 48-148, *Ionizing Radiation Protection, 12 Oct 01*

AFI 90-821, *Hazard Communication, 30 Mar 05*

AFI 91-108, *Air Force Nuclear Weapons Intrinsic Radiation Safety Program, 29 Nov 93*

AFI 91-202, *The US Air Force Mishap Prevention Program, 1 Aug 98*

AFMAN 37-123, *Management of Records, 31 Aug 94*